

Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Currently Amended) A method ~~for accelerating storage access in a network, said method~~ comprising:

a) ~~receiving a data record having a plurality of data segments as a received data record;~~
b) ~~saving said data segments of a data record having a plurality of data segments in a local memory of a network controller (NC);~~

c) ~~assigning a virtual write buffer (VWB) entry, in said the NC local memory, for the received saved data record; and~~

d) ~~virtually reassembling said the data segments of said the saved data record in the NC local memory using said the VWB entry to form a reassembled data record~~

~~; and,~~

e) ~~sending said reassembled data record from the network controller directly to an I/O controller of a storage device.~~

2. (Previously Presented) The method of claim 1, further comprising:

~~allocating correlating~~ a private buffer to a memory address space in a host local memory.

3. (Currently Amended) The method of claim 1, wherein ~~said the~~ NC is coupled to a storage target system and to a network.

4. (Cancelled)

5. (Currently Amended) The method of claim 1, further comprising:
sending the reassembled data record from the NC directly to an ~~wherein said~~ I/O controller ~~is further coupled to~~ of a storage device.

6. (Currently Amended) The method of claim 1, further comprising:
receiving wherein the data record is received using a sub-process comprising:
i) performing a transport layer processing on the data segments; and,
ii) assigning a memory object descriptor (MOD) to each of the data segments.

7. (Currently Amended) The method of claim 6, wherein each said MOD points to a memory location where a corresponding data segment is stored in the NC local memory.

8. (Currently Amended) The method of claim 6, wherein said the MODS are linked together to form a record structure.

9. (Original) The method of claim 2, wherein an available private buffer is used from a pool of pre-allocated private buffers.

10. (Currently Amended) The method of claim 2, wherein said the NC maintains a VWB table, wherein said the VWB table includes at least a VWB entry.

11. (Currently Amended) The method of claim 10, wherein said the VWB entry comprises at least two sub-entries, wherein a first sub-entry is an offset field and a second sub-entry is a pointer field.

12. (Currently Amended) The method of claim 11, wherein a memory address space utilized by said the VWB entry is mapped to the memory address space of the allocated private buffer when the VWB entry is assigned.

13. (Currently Amended) The method of claim 11, wherein reassembling said the data segments comprises setting said the offset field and said the pointer field.

14. (Currently Amended) The method of claim 13, wherein a memory object descriptor (MOD) is assigned to each of the data segments, and
wherein setting said the offset field and said the pointer field further comprises:

i) iteratively, for each MOD, determining a size of a corresponding data segment pointed by ~~said~~ each MOD;

ii) setting ~~said~~ the offset field to a size of ~~said~~ the corresponding data segment pointed by ~~said~~ the MOD; and,

iii) setting ~~said~~ the pointer field to point to ~~said~~ each MOD.

15. (Currently Amended) The method of claim 14, wherein a VWB entry is associated with each ~~said~~ allocated private buffer.

16. (Currently Amended) The method of claim 15, further comprising:
sending the reassembled data record from the NC directly to an I/O controller of a storage device,

wherein the reassembled data record is sent to the I/O controller using a sub-process comprising:

a) providing ~~said~~ the I/O controller with an address space of ~~said~~ the private buffer associated with ~~said~~ the VWB entry;

b) translating the address space of ~~said~~ the VWB entry to a physical address location of ~~said~~ the reassembled data record;

c) obtaining ~~said~~ the reassembled data record from ~~said~~ the physical address location; and,

d) sending ~~said~~ the reassembled data record directly to ~~said~~ the I/O controller over an I/O bus.

17. (Currently Amended) The method of claim 16, wherein ~~said~~ the physical address location designates a location of ~~said~~ the reassembled data record in the NC local memory.

18. (Currently Amended) The method of claim 16, wherein ~~said~~ the I/O controller is provided with the address of ~~said~~ the private buffer, upon initiating a direct memory access (DMA) request by ~~said~~ the I/O controller.

19. (Currently Amended) The method of claim 16, wherein the NC sends ~~said the~~ reassembled data record upon a reception of a DMA read request initiated by ~~said the~~ I/O controller.

20. – 59. (Cancelled)

60. (New) A method comprising:
correlating a private buffer to a memory address space in a host local memory.
saving data segments of a data record having a plurality of data segments in a local memory of a network controller (NC);
assigning a virtual write buffer (VWB) entry, in the NC local memory, for the saved data record, the memory address space utilized by the VWB entry being mapped to the memory address space of the allocated private buffer when the VWB entry is assigned;
maintaining, in the NC, a VWB table, wherein the VWB table includes at least a VWB entry, the VWB entry including at least two sub-entries, wherein a first sub-entry is an offset field and a second sub-entry is a pointer field; and
reassembling the data segments of the saved data record using the VWB entry to form a reassembled data record.

61. (New) The method of claim 60, wherein the NC is coupled to a storage target system and to a network.

62. (New) The method of claim 60, further comprising:
sending the reassembled data record from the NC directly to an I/O controller of a storage device.

63. (Currently Amended) The method of claim 60, further comprising:
receiving the data record using a sub-process comprising:
performing transport layer processing on the data segments; and,
assigning a memory object descriptor (MOD) to each of the data segments.

64. (New) The method of claim 63, wherein each the MOD points to a memory location where a corresponding data segment is stored in the NC local memory.

65. (New) The method of claim 63, wherein the MODS are linked together to form a record structure.

66. (New) The method of claim 60, wherein an available private buffer is used from a pool of pre-allocated private buffers.

67. (New) The method of claim 60, wherein reassembling the data segments comprises setting the offset field and the pointer field.

68. (New) The method of claim 67, wherein a memory object descriptor (MOD) is assigned to each of the data segments, and

wherein setting the offset field and the pointer field further comprises:

iteratively, for each MOD, determining a size of a corresponding data segment pointed by each MOD;

setting the offset field to a size of the corresponding data segment pointed by the MOD; and,

setting the pointer field to point to each MOD.

69. (New) The method of claim 68, wherein a VWB entry is associated with each allocated private buffer.

70. (New) The method of claim 69, further comprising:

sending the reassembled data record from the NC directly to an I/O controller of a storage device,

wherein the reassembled data record is sent to the I/O controller using a sub-process comprising:

providing the I/O controller with an address space of the private buffer associated with the VWB entry;

translating the address space of the VWB entry to a physical address location of the reassembled data record;

obtaining the reassembled data record from the physical address location; and sending the reassembled data record directly to the I/O controller over an I/O bus.

71. (New) The method of claim 70, wherein the physical address location designates a location of the reassembled data record in the NC local memory.

72. (New) The method of claim 70, wherein the I/O controller is provided with the address of the private buffer, upon initiating a direct memory access (DMA) request by the I/O controller.

73. (New) The method of claim 70, wherein the NC sends the reassembled data record upon a reception of a DMA read request initiated by the I/O controller.